HOW PROF. COOK DISCOVERED THE BOLL WEEVIL'S NEMESIS

THE MAN WHO DISCOVERED THE GUATEMALAN ANT.

Prof. O. F. Cook, Head of the Bureau of Tropical Agriculture, Examining Through the Microscope One of the Little Insects Which Are Expected to Put an End to the Boll Weevil.

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A Personal Account of the Manner in Which the Guatemalan Ant Was First Noticed, Then Studied, and Finally Imported.

A Most Interesting and Intelligent Little Insect Is This Ant, With Well Ordered Habits of Life and Unlimited Personal Courage.

ONE of the most talked about "immigrants" that have recently arrived in the United States is the Guatemalan ant, an insect whose people have lived for centuries among the mountain wilds of Central America.

Like the negro who landed at Jamestown in 1620, the Guatemalan ant has been brought to this country without the desire or knowledge of Americans, and against his own consent. He was captured, caged, and imported into Texas by way of New Orleans, several months ago, by a representative of the Department of Agriculture—one of that nomadic army of investigators who pitch their tents in every clime, from the equator to either pole.

The captor says that, in expatriating the Guatemalan ant, the Department of Agriculture has promoted scientific investigation, and that this is one the cases where the theory of "the consent of the governed" should not be too rigorously respected. The ant has a different story to tell. Civilization requires that the Department of Agriculture, it is said, should take up "the white man's burden" in Guatemala, as well as elsewhere, and carry forward there the work of "benevolent assimilation."

At any rate, the Guatemalan ant is here, and, like the negro, he is here to stay. He has come not to complicate but to simplify our problems. He is expected to settle the question whether or not the cotton boll weevil should enjoy life, liberty, and the pursuit of happiness in the cotton belt of the Southern States.

It is thought that what he will do to the cotton boll weevil will be a-plenty and that when he gets through with the weevil the latter insect, like the Arab, will fold up his tent, and silently steal away.

To remain will be to court instant death; for it is a bugological, antological, and weevil logical fact that the queen in every Guatemalan ant nest makes everyone of her offspring take an oath to exterminate the boll weevil tribe precisely as Hamilcar swore Hannimal to vengeance against Rome.

An Entomological Gallileo.

The discovery of this scientific fact, namely that the Guatemalan ant has an inherent and inalienable propensity to kill the cotton boll weevil, was made by Prof. O. F. Cook, the head of the Bureau of Tropical Agriculture.

Prof. Cook is a shortish, well-knit man, with black hair, touched with gray, bronzed complexion, soft speech, and an eye that seems to be always on the lookout for a cotton boll weevil or a Guatemalan ant. His eye makes his listener think that Prof. Cook has spent no small fraction of his life looking through a microscope. He has what might be called the microscopic eye—all botanists, biologists, and chemists have it, precisely as all astronomers have the telescopic eye—an eye accustomed to take long-range visions, and mirroring the sense of imagination.

Studied Coffee and Found an Ant.

As head of the Bureau of Tropical Agriculture, Prof. Cook went to Guatemala two years ago to study coffee culture, or, to put the thing in every day English, to study how coffee is raised in that country. He found out more about coffee culture on that visit than was ever dreamed of in the coffee planters' philosophy. And what was more to the point of this article, he for the first time made the acquaintance of what has become his especial pet—the Guatemalan ant. It was not exactly an acquaintance, either, but rather an intimation that the ant inhabitated the Guatemalan cotton fields and that he might make himself known if his acquaintance were studiously sought.

Prof. Cook was studious enough. He had been a student for twenty years—had graduated from Syracuse University in 1890, taught biology there in 1891, and later went to Siberia, where he studied explorations for five years, returning to the United States in 1897, and landing his present job in the Bureau of Tropical Agriculture the same year. But he had his mind on coffee rather than cotton, and treated the Guatemalan as a sort of ship that passes in the night. He might meet him again; if so, well and good; if not, then none the worse would he be.

One day in Guatemala—how the Guatemalan ants, imprisoned now in eighty-five jars in the cotton belt, must curse that day!—Prof. Cook, in walking through a cotton field, observed that the cotton was not infected with the boll weevil.

He made a mental note of the fact, and when he returned to the United States reported to the department that he had found what he believed to be a "boll weevil resisting variety of cotton."

When the announcment was made the chiefs in the department rubbed their eyes and wondered why it was that the Guatemalan fever had a tendency to make even the sanest scientists candidates for St. Elizabeth's. A boll weevil resisting cotton? Impossible! But Prof. Cook persevered, and the upshot was that he and his assistant were permitted to go to Guatemala and experiment with the boll weevil-resisting cotton.

Giving Credit to the Ant.

They had a humorous time of it. Out there in the mountains, among the Guatemalan Indians, who spoke neither Spanish nor English, but merely a dialect of their own, hardly intelligible even to the interpreter, the tropical agricultural experts were confronted with real difficulties. However, they were not discouraged. One day they discovered that though the field cotton was free from the boll weevil, yet the bush cotton—that is, cotton growing on bushes and small trees—was being wholly destroyed by the boll weevil pest.

Prof. Cook then wondered why it was that the boll weevil in Guatemala avoided the field cotton. He examined the field cotton closely and found a great number of ants in and near the cotton. It then occurred to him that the ant was an enemy of the boll weevil.

To test the accuracy of his deductions, he caught several boll weevils and put them on the field cotton. The moment the ant saw them, he made for them, stinging them one by one, killing them and carrying them into the ant nest a few feet away.

Then it was that Prof. Cook realized he had solved the problem. Those who saw him say that as the significance of the discovery dawned upon him, his eyes lost for a moment their microscopic expression, and colored with laughter.

How the Ants Live.

Then he got busy.

He traced the ants to their nests. These nests, or "colonies," are in the ground, from one to three feet below the surface of the earth. They are reached through an aperture about the size of a half dollar on the surface of the earth. These apertures are vertical to begin with, but a little below the surface they begin to wind, and are broken by galleries that run off at right angles from the main aperture. In these galleries the "workers" live.

Royal Chamber and Throne Room.

At the bottom of the nest is "the royal chamber," and nearby the "throne room." The royal chamber is where the queen ant lives. The throne room is where the queen and the drones meet on state occasions and hold their cabinet meetings.

Tiny Kingdom, Indeed.

At these meetings the "workers" are represented and reports are heard on the various departments of the kingdom.

Each of these ant kingdoms number from 50 to 200.

They consist of the queen ant, the male drones—and all the males are drones—and the workers. Only a few drones are permitted. The workers have a habit of killing off the males who are ineligible to be drones. The queen ant is the object of a great deal of obsequious attention on the part of the workers and drones.

A hundred ants are always ready to project their stingers and protect the queen from harm. In the ant kingdom the age of chivalry is not yet dead.

Prof. Cook captured a number of "nests" or "colonies." Among them were queens, drones, workers, cocoons, larvae, and eggs. These he imprisoned in jars half filled with earth, and brought them to the United States.

A Complete Success.

He passed New Orleans unmolested, but when he arrived in Texas he was greeted very much as a stranger is in the enemy's country. Texans had an idea that the Guatemalan ant would destroy cotton, and that it would be suicidal to permit it to get abroad in the Lone Star State. This alarm was soon quieted, however, and Prof. Cook began his experiments.

He has been extremely successful. The ants have multiplied and been exceedingly fruitful, and now they are numerous enough to operate effectively our wide territories. Whenever given a chance they drive the boll weevil out completely.

Can He Stand the Winters?

The question that is now giving the department anxiety is whether or not the ant can live through the winter in the cotton belt of the Southern States. The climate and configuration of this belt are quite different from those on Guatemala.

Prof. Cook hopes that the ant will hibernate in the United States, but admits that only time can determine the fact. It is believed that the Guatemalan ant, accidentally discovered by Prof. Cook, will be exceedingly helpful in the production of cotton—a belief that suggests again the parallel between this latest "immigrant" and another that was brought to our shores against his will and without our knowledge.

Held in Slavery.

The Guatemalan ant is now in bondage—imprisoned as he is in eighty-five large jars, in various sections of the South; the day of his redemption is drawing near. It is said that Prof. Cook has already prepared a rough draft of emancipation, and that as soon as it is approved by Secretary Wilson, the Guatemalan ants—queens, drones, and workers—will be set free to build their nest and colonies in Southern cotton fields, and direct their war of extermination against the cotton boll weevil.

The cotton boll weevil, in the meantime is protesting vigorously, saying that under the Constitution of the United States it is entitled to the rights of life, liberty, property, reputation, and fair industrial opportunity, and the Secretary of Agriculture should see to it that the door of life—the door of opportunity—is not closed against any member of the insect kingdom.

THEMES OF PRESENT AND LASTING INTEREST DISCUSSED BY G. STANLEY HALL

"The world is young. Some of the races that people it may be too old and even now verging toward decadence. 'Man,' some one has said, 'is the tadpole of an archangel,' and the super-man—the man of the future—may be as greatly the superior of the man of today as are we of some of the higher animals. The future is big with promise; the best of the world's history has never been written.

"Let us look carefully then to the adolescents—the individual children and the separate races that give promise of the most rapid growth. In them reside the hope and the glory of ages yet to be."

Dr. G. Stanley Hall, president of Clark University, recently delivered a series of three lectures at Howard University. He spoke in the morning, at noon, and in the evening, each of the lectures upon a different topic, but all tending to the cultivation of a spirit of intelligent care for the children of the race. The evening lecture had for its subject "Adolescence," the title of Dr. Hall's recent book, that has received such widely favorable criticism. Those who have read and understood have hailed the author as the protagonist of a new gospel.

"English, the Language and the Literature, and How to Teach It," was discussed by Dr. Hall in the lecture delivered at noon. Dr. Hall is an optimist—he says—but he treated the subject from the standpoint of one who has looked for perfection and found something decidedly different. And yet, possibly, that is a way the optimists have.

Language Is Decadent.

He bemoaned in his introduction the growing incapacity of the young of the present to speak and write the language of the race, and declared investigations made by educators among the applicants for admission to a number of colleges and universities had revealed a state of ignorance that surprised and shamed. Then he proceeded to discuss the causes and to assign cures.

The causes that have led to this condition of affairs are several, said Dr. Clark.

"In the first place," he said, "English is the biggest language on earth. The last edition of the 'Century Dictionary' contains 350,000 words of accepted and approved excellence, as against a little more than 50,000 in the first edition of Webster. The dictionary of the French Academy contains but 50,000 words, Spanish 60,000, German 80,000, Dutch 50,000, and Portuguese 57,000. It is easy to see the difference and appreciate its meaning.

"Nor is this all. The words in the dictionary do not include derivatives and many others. The leading editor of the 'Century Dictionary' has recently declared he would undertake to produce one million good English words, that would receive the sanction of philologists, for one million good American dollars, that would pass muster at the bank."

Other difficulties of the language were adverted to by the speaker. It has borrowed from almost every tongue—between 6,000 and 8,000 words from the Indians, many from the Chinese—it has added to itself from the baby talk of mothers and gathered a new inspiration from the slang of the gamins on the streets. No language is so creative; none has such a capacity for absorption.

Slang Is Everywhere.

"In fact," said Dr. Hall, "it is difficult to enforce the prim proprieties of Addisonian or Miltonic syntax upon the mind and speech of the modern boy of our schools. No matter how diligent the effort in the classroom, as soon as he is again on the streets he relapses into his native element and begins to speak the language of the pave. It may be, as has been suggested, that one reason for the decadence of English is that we have tried to make children speak too correctly."

The wrong or excessive use of foreign languages in the schools was roundly condemned, the almost universal effort to teach a smattering of Latin coming in for a special share of reprobation. On this special subject Dr. Hall voiced a very definite opinion that "a little learning is a dangerous thing."

"I have no great regard for the polyglot speaker, who is just that and nothing more, anyhow," said Dr. Hall. "When I run across one of these gentry I am forcibly reminded of the linguistic prodigy who dwelt some years ago in Europe, of whom it was said he could recite the Lord's Prayer in thirty different languages. It was added, though, that only the Lord himself could understand what was said in any one of them."

The stress placed on reading and writing as contrasted with speaking and hearing—the cultivation of the eye and fingers, as opposed to the cultivation of the tongue and ear—in the schools of today, won no favor from Dr. Hall. Man spoke and heard for hundreds of thousands of years before he wrote or read, and to emphasize the later method of communication was to make use of the long circuit instead of the short. Books should be banished from the class room during the early years of a child's instruction. The story, with its potentialities for wise instruction, for the stimulation of the imagination, should have a prominent place in every primary school curriculum.

The Charm of the Story.

"There was never yet a born teacher who was not a born storyteller—never one who could not weave that hypnotizing spell of 'once upon a time.' If I were Plato's wise tyrant and had the power to select every teacher in the country I would name those only who could spin their fancies into words and lead the willing imaginations of little children into the byways of romance, beyond the mountain passes of mystery and beauty, as once of old the Pied Piper of Hamlein led the rats and children of that city by the incantation of his magic flute."

And to illustrate what he meant Dr. Hall told a story himself, with such simple effectiveness that the point was pressed home once for all.

"Once upon a time there was a little girl," he said, "who had lost both father and mother—who had no friends to care for her and who must make her own way in the world. She had only the clothes she wore and another dress, and a loaf of bread, but still she started bravely out.

"It was cold; the snow lay deep upon the ground. After a little while the little girl came upon another, of her own age, who was starving, and she gave her a loaf of bread. She went on and there was a child who was shivering in the cold, and she gave the clothes she was carrying. Still a little farther on another little girl was cold and unhappy and the first little girl gave her her outer garment. And in the deep wood, where the snow was deeper and the cold colder, she found a little girl who was freezing and naked and she took off her under garment and wrapped it around the cold limbs.

"The stars were shining and she stood and looked up to them for help—and all of a sudden the stars became silver dollars and fell at her feet and she lived rich and happy ever after."

A Profound Effect.

There was a ripple of relieved laughter as Dr. Hall concluded the simple little tale. He had told it so solemnly and with such pathos that the end had not been anticipated and though it appears a bit futile, perhaps, in cold print, his manner and expression warmed it into life. He had made his point.

The sacrifice of content to form—the teaching of language rather than the literature it perpetuates—was given by Dr. Hall as another cause of decadence. He declared the young people of the day were lacking, almost universally, in knowledge of the traditions of the race. The last cause is the emphasis placed upon objective teaching and the neglect of the symbolic words and expressions of the language.

As cures for the evil Dr. Hall prescribed the absorption of resonant words, the teaching of the great epic literature of the race, the study of oratory, the elevation of the drama and the close study of the Bible.

"The language is rich in epic literature," he said. "The traditions that have given inspiration to Wagner's operas and to Tennyson's poems, to Spenser and Raleigh and the great host of others are filled with inspiration for the youth of the present. They embody the very efflorescence of honor; they teach chivalry to women; they contain the poetry and romance that appeal to young hearts, budding and bourgeoning."

Oratory, too, came in for its share of praise, as the present methods of teaching came in for their share of condemnation. Dr. Hall said the modern tendencies were toward trivialities so that the nation faced a real danger of instructing its youth that the thing to do was "to be able to talk without having anything to say." He said the graduate in oratory today was given his diploma on somewhat the same basis as the barber of the middle ages was relieved from his apprenticeship—when he could make two hogsheads of lather from two ounces of soap.

The Ideal of Oratory.

"Rather," said Dr. Hall, "the ideals of the teacher of oratory should conform to the dictum of Quintillian, 'to cadence the soul aright and so to teach the young to cadence aright the souls of others.' The orator should be unstudied, earnest, persuasive. The functions of the orator, as Aristotle has declared, is 'to give to truth the predominance that belongs to it by its own inherent excellence.'"

The drama—the ideal drama—said Dr. Hall, has in it untold possibilities of good. He said the English Bible was a model of style and the greatest of all psychological products. He pleaded for its teaching without regard to the religion it inculcates or the dogmas it lays down.

"Our language is a great heritage," concluded Dr. Hall, "and we should treasure it and keep it pure and use it aright. If we are earnest, diligent, intelligent, and sincere—if we instill these lessons into the minds and hearts of young people—then and then only shall we come into and exhaust the full possibilities of this priceless and unprecedented possession."

"Adolescence."

The lecture on "Adolescence" was that one, as a matter of course, which attracted the largest share of general public attention and interest, an interest, by the way, that was generously rewarded. Adolescence, it was explained by the lecturer, comprises the period of life between twelve or eighteen and twenty-four or twenty-five. The changes that ensue, the dangers that infest and the possibilities that inhere to this period of life were the themes upon which Dr. Hall dwelt.

"The development of a human being," he prefaced, "represents the development of the race. The period of life between eight and twelve does not involve much change, depicting, if the theory of evolution be correct, the early pygmean stage of racial progress upward. It is the stage of discipline, of habitation. Children then regard themselves as a race apart from their elders; they hold different theories of life; they live in a different atmosphere.

"But with the advent of the teens a new era dawns. Individuality begins to bourgeon, personal tastes to make their appearance, personal ambitions to take possession of the mind. It is the period of rapid growth and expansion—and education must meet its needs. If education is to be successful it must supply a secret and sympathetic chord between the heart and brain of the teacher and the heart and brain of the child. One great function of education is the establishment and encouragement of the special talent."

Phenomena of Growth.

Dr. Hall discussed in some detail the phenomena of growth, with the peculiarities that science has noticed. He paid tribute to the microscope, which had made many of these physiological observations and deductions possible. He said that nature's way was always the best and that it was the duty of the teacher to get out of the road and permit nature to have full swing.

"It has been said," he declared, "that one ounce of heredity is worth a ton of education."

"During this rapid period of development a very little serves to arrest it, mentally and physically. The pathetic thing about it is that the qualities last developed are the highest and best and noblest. One-fourth of the inmates of all our hospitals for the insane are adolescents—and the probability is that for one that is confined there are twenty walking the streets who ought to be."

The proneness of adolescence to disease and to criminality was next taken up. Dr. Hall said the criminal statistics showed a steady increase in juvenile crime and a steady lowering of the age at which the first criminal offense was committed. The fact applies to every form of crime and every type of vice.

It Is the Age of Love.

"Adolescence," said the speaker, "is the age of love. It marks the awakening of the affections, not only to the charms of the other sex, but toward God and nature. It is a physiological renaissance. It is the day of the birth of the sentiments and emotions. Childhood is essentially selfish—and naturally so—but in these critical years of our new birth comes a great flood of new emotions.

"Then we begin to hear from our later forebears. It has been computed by a scientist that each of the present generation, going as far back as the landing of William the Conqueror, has had nine billion ancestors. So you see there is probably the blood of kings and beggar-men, statesmen and mendicants, and worse, coursing in the veins of every one of us. There must be a rather complicated blend.

"It is the time when our emotions should be educated and directed aright. All of us feel fear, for instance, but not in all of us is fear inspired by the proper objects. We should fear God—not mice or bugs. Education should teach us to fear the things that are worthy of being feared.

"And anger—there is another emotion that cannot be suppressed and that should not be. Isn't there evil enough in the world to demand all the indignant resentment a man can body forth? Education should instruct us to be angry on the proper occasions.

Sympathy and Pity.

"Sympathy—pity—it is the foundation of our civilization. It is a keen fellow-feeling for the sufferings of others, and it has been said that all morals and the whole of ethics are based upon it. Education, we may say, then, is teaching young people to pity aright. There are some women who expend all their sympathy upon poodles, and there is a story of a Russian countess who went to the theater, wept at the troubles depicted upon the stage—and suffered her coachman to freeze to death in the snow without. We should give pity and sympathy where it is due.

"And last of all—love, the greatest of all our emotions. The love of God, of nature, of the other sex—how inseparably are they woven together? So inseparable are they, indeed, that he who fails to feel any one of them cannot feel the others in their fullest effulgence. Education should teach us to love aright all of nature's handiwork, the clouds and the winds and waves, for they are of God.

"Everyone who matures properly will pass from the life of selfishness to the life of sacrifice and self-denial. Altruism becomes a passion, and we make a virtue of the sad necessity of our being. Love has triumphed, as when

> 'Love took up the harp of love and
> smote on all its strings with might;
> Smote the chord of self, that, sighing, passed in beauty out of sight.'

Golden Age of Life.

"Adolescence marks the growth of the religious sentiment—the birth of a new and higher life. The power of good and evil struggle for supremacy, as at no other time. Criminality increases, but good, too, is stronger and more wide-reaching.

"It is life's golden age, not only in the lives of individuals, but in the lives of nations. Some races are decadent; some are rising, higher, higher, higher, every day; it may be they are destined to rule the world.

"The old races have passed or are passing away. The tramp of Roman legions once shook the earth and the shrines of Jupiter, Apollo and Venus stood by the side of every highway in the world. Now Rome's soldiery march no more and of all the gods in her pantheon there is not one that keeps a worshiper—no, not one. The gods of Rome are as dead as Rome herself. For such reasons I deprecate the imperialism that would seek to throttle the rise of primitive or adolescent races, wherever they may be found.

"Yes, the world is young, while some of the races that people it may be too old and verging toward decadence—may be following Rome on the downward slope. 'Man,' some one has said, 'is the tadpole of an archangel,' and the super-man—the man of the future—may be as greatly the superior of the man of today as we are of some of the higher animals. The future is big with promise; the best of the world's history has never been written."